

What is claimed is:

1. An aircraft antenna, comprising:

an aerodynamic housing structured for attachment to an outer surface of an

5 aircraft;

a first system in the housing, said first system having an electromagnetic radiator and being tuned over a first band of frequencies potentially to produce secondary radiations in at least a second band of frequencies;

said first system having a suppression filter effective at the frequencies of the
10 secondary radiations.

2. An aircraft antenna as in claim 1, wherein said secondary radiations are harmonics of frequencies in the first band and the suppression filter is a harmonic suppression filter.

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3. An aircraft antenna as in claim 1, wherein said electromagnetic radiator exhibits a characteristic center frequency over a first defined bandpass, and said first system includes a matching network having an operating center frequency close to the characteristic center frequency over a second defined bandpass, whereby
20 simultaneous operation of the matching network and the electromagnetic radiator form the first band of frequencies having a wider band than said first defined band and said second defined band.

4. An aircraft antenna as in claim 3, wherein said characteristic center frequency and said characteristic center frequency are equal to each other.

5. An aircraft antenna as in claim 2, wherein said system includes a band-
5 widening amplitude attenuator at said harmonic suppression filter for the first band of frequencies.

6. An aircraft antenna as in claim 5, wherein a system includes a capacitance compensating inductor at the input of the harmonic suppression filter.

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7. An aircraft antenna as in claim 3, wherein the matching network constitutes the internal inductance of electromagnetic radiator and a matching capacitor.

15 8. An aircraft antenna as in claim 2, wherein harmonic suppression filter includes a notch filter.

9. An aircraft antenna as in claim 8, wherein said notch filter is a distributed component notch filter.

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10. An aircraft antenna as in claim 9, said notch filter includes a circuit board with a plurality of connected conductive traces forming distributed quarter wave LC

circuits and interconnecting conductive traces forming distributed quarter wave LC impedance inverters.

11. An aircraft antenna as in claim 9, said notch filter includes a circuit board
5 with a three connected conductive traces forming three distributed quarter wave LC
circuits and two interconnecting conductive traces forming two distributed quarter
wave LC impedance inverters, so as to form a three pole arrangement.

12. An aircraft antenna as in claim 1, wherein said system includes a second
10 electromagnetic radiator in the housing and tuned over a second band of frequencies

13. An aircraft antenna as in claim 12, wherein said second radiator is a patch
radiator and said first radiator is a cable radiator.

14. An aircraft antenna as in claim 12, wherein said second radiator is a patch
15 radiator and said first radiator is a cable radiator, and said secondary radiations are
harmonics of frequencies in the first band.

15. An aircraft antenna as in claim 12, wherein said second radiator is a patch
20 radiator and said first radiator is a cable radiator, and said secondary radiations are
harmonics of frequencies in the first.

16. An aircraft antenna as in claim 12, wherein said housing has an elongated shape to project from the surface of an aircraft and surrounding the cable radiator and a has an inverted cup cover surrounding the patch radiator and the filter at the base of the elongated shape.

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17. An aircraft antenna as in claim 15, wherein said harmonic suppression filter is a notch filter.

18. An aircraft antenna as in claim 15, wherein said harmonic suppression
10 filter is a band suppression filter.

19. An aircraft antenna as in claim 15, wherein said harmonic suppression filter is a microstrip notch filter.

15 20. An aircraft antenna as in claim 15, wherein said harmonic suppression filter is a microstrip notch filter having sections with lengths of one-quarter wavelength of the frequencies to be suppressed.

21. An aircraft antenna as in claim 15, wherein said harmonic suppression
20 filter is a third order microstrip notch filter having sections with lengths one-quarter wavelengths of the frequencies to be suppressed.

22. An aircraft antenna as in claim 12, wherein said system includes a base orienting said radiators into mutually limited coupled positions.

24. An aircraft antenna as in claim 12, wherein said second radiator is a patch
5 radiator and said first radiator is a cable radiator, and said secondary radiations are harmonics of frequencies in the first band; and

said patch radiator has a rectangular shape and the filter is placed at the tip of the rectangular shape of the patch radiator.

10 25. An aircraft antenna as in claim 1, wherein said matching network includes a shorted quarter wave stub connected across the electromagnetic radiator so as to form a DC short circuit across the electromagnetic radiator, the quarter wave being defined as the center of the band of said electromagnetic radiator.